

square mile drainage in 1956, 1957, or 1958, although several miles of gravelly streambanks are present in the upper Eagle Creek area. Apparently the survival and return of young Tattlers to the area was not sufficient to increase the population during that three-year period.—ROBERT B. WEEDEN, *Department of Zoology, University of British Columbia, Vancouver 8, Canada.*

Land Snails as Food of White-crowned Pigeon.—At Krause Lagoon, St. Croix, Virgin Islands, several hundred White-crowned Pigeons (*Colomba leucocephala*) nest yearly in the mangrove islands of this salt water marsh—the last remaining colony in these islands. For the past five years I have been banding these pigeons in an effort to determine the territorial range covered in their annual movement through the Virgin Islands. For this work squabs only have been used since the capture of adult pigeons in sufficient numbers for banding would be next to impossible.

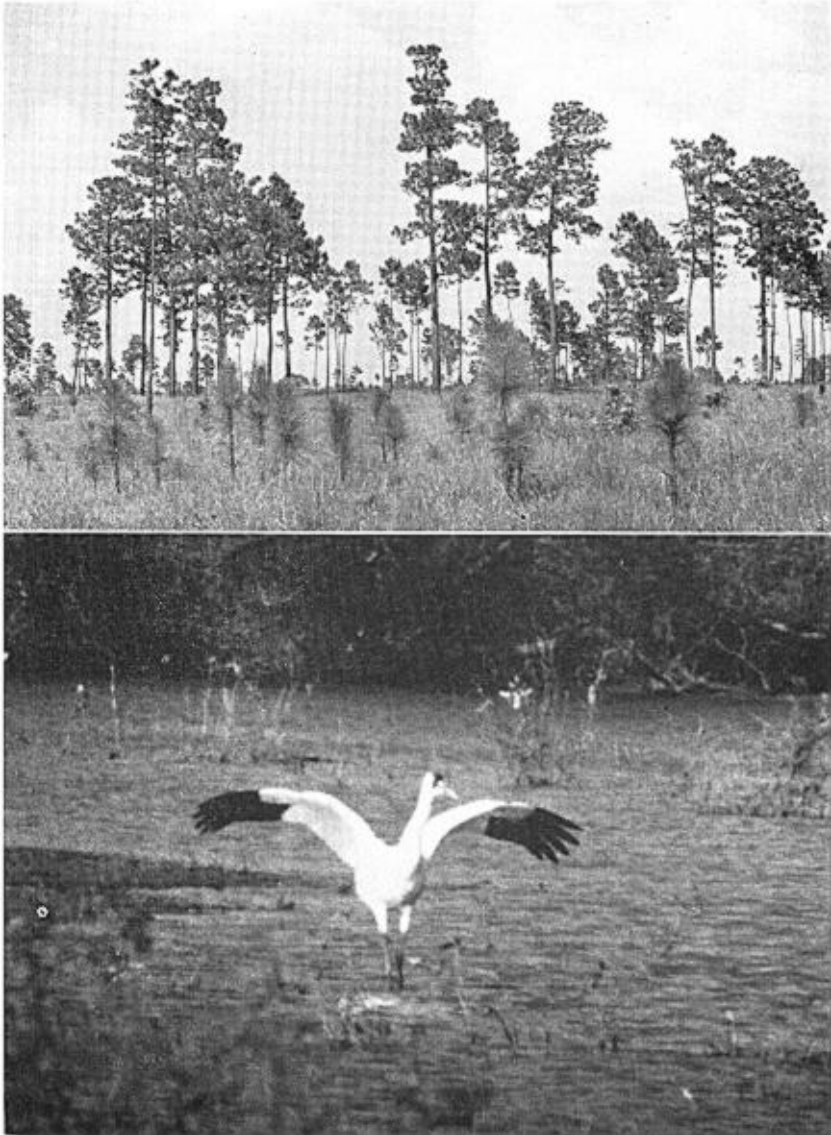
White-crowned Pigeon squabs, always two in number—barring accidents—develop at an amazing rate. At twelve days of age they have become difficult to capture and when they are fifteen days old they can fly and may no longer be a banding possibility.

Undoubtedly one of the principal factors contributing to their rapid growth is the great amount of food fed to them by the parents. A White-crowned Pigeon colony at breeding time is a most active place. From dawn to dark the parent pigeons are on the wing in a constant effort to keep their demanding young filled. The foods given consist primarily of wild berries and fleshy drupes. The full crop of a pigeon squab is often larger and heavier than the rest of the bird. The early days of such squabs consist entirely of sleep and digestion.

The exception to the standard White-crowned Pigeon baby formula is the one where an engorged squab is picked up for banding and it is found that its weight in the hand does not somehow agree with the size of the bird. Examination of the squab discloses a crop full of rattling land snails—including shells! A disgorged snail proved to be *Drymaeus elongatus*, a common tree snail of the local scrub forest. These snails, generally a drab white, and measuring on an average 25×10 mm., are quite abundant. They aestivate during dry periods and often appear like fruit clinging to the scrub. It was found that from one percent to two percent of pigeon squabs were fed these snails. I was told by my local guide that this occurrence was more apt to take place in years of extreme drought when other foods were scarce. Snail appearance in the pigeon diet may be dictated chiefly by necessity rather than by choice.—G. A. SEAMAN, *Box 474, Christiansted, St. Croix, Virgin Islands.*

Notes on Bachman's Sparrow in Central Louisiana.—Notes on the ecology of Bachman's Sparrow (*Aimophila aestivalis*) were obtained during a study of birds in relation to the direct or artificial seeding of Longleaf Pine (*Pinus palustris*) and Loblolly Pine (*P. taeda*) in central Louisiana from 1955 to 1957. Stoddard (in Burleigh, "Georgia Birds," pp. 667–668, 1958) has presented an account of the ecology of this species in the pine woods of southern Georgia. Detailed studies in Louisiana have not been reported. Observations were made on experimental lands of the Kisatchie National Forest, about 25 miles southwest of Alexandria, Rapides Parish.

Habitat: The terrain in this area varies from flat to gently undulating. Natural vegetation is predominantly Longleaf Pine with an interspersed of small stands



(Above) Nesting habitat of Bachman's Sparrow in central Louisiana. Note 3-year-old direct-seeded Longleaf Pine seedlings in foreground.

(Below) Whooping Crane (*Grus americana*) south of Hull, Illinois, October 23, 1958. (Photo, courtesy Ill. State Mus.)

of hardwoods along drainage systems. Some of the poorly managed and denser stands of pine have a shrub stratum of Sumac (*Rhus copallina*), Waxmyrtle (*Myrica cerifera*), Chinquapin (*Castania pumila*), and patches of Blackjack Oak (*Quercus marilandica*) and Post Oak (*Q. stellata*) and scattered Black Gums (*Nyssa sylvatica*). Such scrubby growth is also characteristic of some sections of cut-over lands. In much of the open park-like stands of pine the shrubs are replaced by grasslands consisting mostly of bluestems (*Andropogon divergens* and *A. tener*) and forbs.

Forest management studies in progress in this area indicate that manipulation of the habitat greatly favors Bachman's Sparrow. The cycle of clear or partial cutting followed by direct seeding or planting provides, apparently, optimum habitat. A scattering of seed pine trees, clumps of shrubs and brush piles are left from these operations; these provide singing perches, escape cover and appropriate sites for nesting. The opening of the forest and burning of the ground cover results in an abundance and variety of foods, especially grasses and legumes associated with early stages of succession. Selective cutting or thinning of over-crowded stands produces an open park-like aspect approximating the optimum habitat of Bachman's Sparrow (Plate 9, Above). The Bobwhite (*Colinus virginianus*) and Eastern Meadowlark (*Sturnella magna*) are also favorably affected by such modern forestry operations.

Food: Bachman's Sparrow does virtually all of its feeding on the ground. Four out of five specimens collected during the winter of 1954-1955 and examined for stomach contents contained pine seed as a minor item. The major food was weed seeds (*Panicum* and *Sporobolus*) and beetles. During years of a bumper pine seed crop (about every fifth year) pine mast is available in great quantities from October to January. Artificial or direct seeding of Longleaf Pine in November and December and of Loblolly Pine in February and March supplements the native food supply. But in the artificial or direct seeding of cut-over lands Bachman's Sparrow is not an important depredating species. Damage to pine seed is inconsequential because of the relatively small numbers of this sparrow (one pair per two acres in optimum nesting habitat), non-flocking habits, and absence from large open grasslands.

Nesting: On warm sunny days of mid-February when temperatures reach 75 degrees Fahrenheit or more Bachman's Sparrow begins its song period. The onset of song at Alexandria, Louisiana in 1956 and 1957 preceded nesting by about two months. The usual song perch is a low pine bough, dead branch of a scrub oak, top of a brush pile or a pine stump, and usually from five to ten feet from the ground. Occasionally a bird sings from the ground. One bird was observed to sing 52 songs from the same perch in 15 minutes.

Evidence of the beginning of nesting was obtained on April 16, 1956 when a female (the male was singing 15 feet from the nest site) was seen carrying nesting material to the base of a Milkweed (*Asclepias* sp.) plant. The nest, constructed of Panic (*Panicum* sp.) and blue grasses, was virtually complete by this date and the first egg was laid April 17. An additional egg was deposited each day through the 20th, completing the clutch of four eggs. The four eggs were marked and on May 2, the first three eggs laid had hatched; the fourth egg laid hatched the next day.

On May 6, between 3:30 and 4:30 p.m. the young were fed three times, twice by the female and once by the male. The parent remained at the nest for from five

to fifteen minutes following feeding. Grasshoppers (Acrididae) and Coleoptera larvae were among items fed to the young.

In the same area bob-tailed young were still being fed by parents during the first week of August.—BROOKE MEANLEY, *Patuxent Research Refuge, Laurel, Maryland*.

Whooping Crane in the Mid-West.—On October 18, 1958, we were informed by Mr. Charles Dunker, Jr., a farmer living in Pike County, Illinois, of the presence of a Whooping Crane (*Grus americana*) on a farm operated by him in the Mississippi River bottoms near the town of Hull. We made an airplane flight to the area to verify his identification. The bird was photographed from the air, and, as it paid little attention to the plane, we were able to get sufficiently close to see its bare, carmine crown.

We visited the area by car on October 19, and observed the crane for several hours. Mr. Dunker informed us that he first noticed the bird on October 16, and reported it to Mr. Arch Mehrhoff, manager of the Mark Twain National Wildlife Refuge, who saw the crane. Later it was observed by a number of biologists, including William C. Starrett and Richard R. Graber of the Illinois Natural History Survey; Milton Thompson and Paul Parmalee of the Illinois State Museum; and William Greene, Duane Norman, Marshall Stinnett, and Victor Blazevec of the U. S. Bureau of Sport Fisheries and Wildlife. (See Plate 9 *Below*.)

The Whooping Crane was an adult, as determined from the absence of rust spots in the white plumage and the bare, carmine crown. It spent a large part of each day resting on a mud flat which jutted into a narrow, shallow pond which was about one-half mile in length. When interested in feeding, the crane flew from its resting place to a harvested corn field at the upper end of the pond. It would feed upon waste corn in the field and then walk along the margin of the pond, apparently thrusting its bill into crayfish burrows. The crane completed such feeding excursions in from two to four hours, traversing the length of the pond to its customary resting place.

The bird remained at this same pond until November 5; it was last seen late in the afternoon some four miles to the south. An aerial reconnaissance of the Mississippi River valley above St. Louis on November 6, failed to disclose its whereabouts, and no further report was received of this bird in the Mississippi River basin. However, an adult Whooping Crane, observed by Dick Droll, U. S. Game Agent, at Eagle Lake, near Houston, Texas, on November 9 and 10, 1958, is believed by Claude F. Lard, refuge manager of the Aransas National Wildlife Refuge, to be the same individual which was last seen near Hull, Illinois, on November 5. A short time later this crane joined the other 31 Whooping Cranes which had been on the Aransas Refuge for several weeks.

It is also highly probable that this Whooping Crane, which appeared on October 16, near Hull, Illinois, is the same individual which was observed from October 12–15 in the northwestern corner of Missouri, near Bigelow. That crane was last seen on October 15, flying to the southeast, according to Mr. Richard Vaught of the Missouri Conservation Commission. Since the bird near Hull was observed a day later, and that town lies 250 miles in an east-southeast direction from Bigelow, Missouri, it is probable that the same bird was involved in both observations.

Another Whooping Crane, a juvenile, appeared in the mid-West on December 1, 1958. On that date Lyle J. Schoonover, refuge manager, observed it on the Mingo National Wildlife Refuge near Puxico, in southeastern Missouri. This bird had rust patches on its head and wings, and hence could not have been